

AMENDMENTS TO THE CLAIMS

Claim 1. (Currently Amended) A SiC-based composite material capable of use as an inner coating for an aluminium smelting furnace or as an inner coating for a fused salt electrolytic cell, wherein said composite material has been prepared from a precursor mixture comprising at least one β -SiC precursor and at least one carbonated resin, ~~and~~ wherein said composite material contains inclusions, and wherein at least one part ~~thereof~~ of the inclusions comprises α -SiC, in a β -SiC matrix.

Claim 2. (Previously Presented) A composite material according to claim 1, wherein a fraction by weight of said inclusions is between 80% and 95% with respect to the total mass of the precursor mixture.

Claim 3. (Currently Amended) A composite according to claim 1, wherein at least a portion of said inclusions comprise at least one of alumina, silica, TiN, ~~and/or~~ or Si_3N_4 .

Claim 4. (Previously Presented) A composite according to claim 1, wherein at least 50% by weight of said inclusions comprise α -SiC.

Claim 5. (Previously Presented) A composite according to claim 1, wherein said material has a density of at least 2.4 g/cm^3 .

Claim 6. (Previously Presented) A composite according to claim 1, wherein said material is in the form of bricks or panels.

Claim 7. (Previously Presented) A composite according to claim 1 capable of use as a lining for an electrolytic cell for the production of aluminium from a mixture of alumina and cryolite.

Claim 8. (Previously Presented) A composite according to claim 4, wherein at least 70% by weight of said inclusions comprise α -SiC.

Claim 9. (Previously Presented) A composite according to claim 5, wherein said density is from 2.45 to 2.75 g/cm³.

Claim 10. (Currently Amended) A composite according to claim 2, wherein at least a portion of said inclusions comprises at least one of alumina, silica, TiN, ~~and/or~~ or Si₃N₄.

Claim 11. (Previously Presented) A composite according to claim 3, wherein at least 50% by weight of said inclusions comprise α -SiC.

Claim 12. (Previously Presented) A composite according to claim 4, wherein said material has a density of at least 2.4 g/cm³.

Claim 13. (Previously Presented) A composite according to claim 5, wherein said material is in the form of bricks or panels.

Claim 14. (Previously Presented) A composite according to claim 9, wherein said material is in the form of bricks or panels.

Claim 15. (Previously Presented) A coating for an aluminum smelting furnace comprising a composite of claim 1.

Claim 16. (Previously Presented) A coating for a fused salt electrolytic cell comprising a composite of claim 1.

Claim 17. (Previously Presented) A lining for an electrolytic cell comprising a composite of claim 1.

Claim 18. (Currently Amended) A method for making a coating suitable for use in an aluminum smelting furnace or an electrolytic cell comprising:

preparing a composite material from a precursor mixture comprising at least one β -SiC precursor and wherein said composite material comprises inclusions, and further wherein at least a portion thereof of the inclusions comprises α -SiC in a β -SiC matrix, and forming said coating from said composite material.

Claim 19. (Currently Amended) A method of claim 18, wherein at least a portion of said inclusions comprise at least one of alumina, silica, TiN, ~~and/or~~ or Si_3N_4 .

Claim 20. (Previously Presented) A coating prepared by a method of claim 18.